PRELIMINARY IDENTIFICATION OF DEER DAMAGE SEVERITY ZONES

by

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PROGRESS REPORT

PRELIMINARY IDENTIFICATION OF DEER DAMAGE SEVERITY ZONES

by

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June 1985

PROGRESS REPORT

STATE: NEW YORK
PROJECT NO: W-146-R: 10-11

PROJECT TITLE: Public Attitudes Toward Wildlife and Its Accessibility

STUDY NUMBER AND TITLE: I- Deriving Social Indices of Public Attitudes Toward Wildlife Populations and Their Use

STUDY OBJECTIVE: To derive indices for managing population levels that consider range carrying capacity, impacts on other land uses and public attitudes.

JOB NUMBER AND TITLE: I-9 - Identifying and Evaluating Parameters for Deer Damage Mitigation Programs

JOB OBJECTIVE: To identify and assess various parameters for developing a deer damage mitigation program.
To assess the acceptability of deer damage mitigation measures (alternatives) to farmers.

JOB DURATION: 1 April 1984 - 31 March 1986

PURPOSE OF REPORT

This progress report presents information on potential deer damage severity zones based on our analysis of previous deer damage surveys. We see this report as a communications piece with Bureau of Wildlife staff, providing preliminary information that will serve as an an initial basis and impetus for decision-making to enhance further planning for this job. We hope this information will be reviewed and considered for possible verification using other Bureau information sources so that we can identify reasonable zones of severe deer damage.

INTRODUCTION

Based on our earlier work documenting farmer's perceptions of deer damage we recognized that certain areas and types of farmers were subject to markedly higher amounts of deer damage than other areas or types. Further analysis of the data has been undertaken to identify chronic areas of severe deer damage. Fruit growers have also been separated out as a special audience because of their perception of high losses due to deer, documented in earlier studies. For farmers within these "severe" deer damage zones our next year's job segment will focus on identifying mitigation preferences.

METHODS

Five studies of farmer tolerance to deer damage were used in this analysis. Four similar studies using samples collected on a township basis were conducted in Central and Western New York, and the mid-Hudson Valley during 1976-1981. The fifth survey, conducted in 1982, was a resurvey of farmers in Central and Western New York but the sample was selected using Deer Management Units, not towns, as the sampling strata. This had the effect of reduced sample sizes in some towns and no sample in other towns.

For each study the percent of farmers with damage and the mean dollars of damage for those farmers with damage were calculated, by town. Both measures in combination were used to define "severe" damage, except where noted below. Since the 1982 resurvey did not use township as a basis for sampling, some towns had an insufficient sample size ($n<5$) for analysis. For the studies of Central and Western New York the percent with deer damage ranged from 4 to 52%. A cut-off point of >30% was used to define "severe" damage and <15% was used to define "low" damage. Mean dollars of damage for those with damage

ranged from <$1 to $96 per acre. A mean of ≥ $10 damage per acre was used to define "severe" damage; 20% experienced this level of damage. (Mean dollars of damage could not be used in the 1982 resurvey because of small sample sizes.) For the 1981 survey of the mid-Hudson Valley the percent with deer damage ranged from 0 to 65%, again a cut-off point of >30% for "severe" damage and <15% for "low" damage was used. Mean dollars of damage for those reporting damage ranged from $3 to $81 per acre. Twenty-five dollars or more was used to define "severe" damage; 24% experienced this level of damage.

A similar method was used to obtain the percent of farmers with various levels of damage for those farmers growing fruit or grapes. Thirty percent or more was used as a cut-off point in all study areas to define "severe" damage, however no damage was used to define "low" damage. Fruit growers in the mid-Hudson Valley had exceptionally high dollars of damage per acre (range $1 to $600), and therefore the median ($43) was used as the cut-off point for classification of "severe" damage.

RESULTS

By using the results of the original surveys in Central and Western New York, overlayed with the results of the resurvey done in 1982, potential deer damage severity zones were identified (Figure 1). Zones that consistently, over time and measure, showed high deer damage were located in the western portion of Chautauqua County and most of Genesee and Wyoming Counties. The northern portion of Ontario County and the remaining portions of Genesee and Wyoming Counties were identified as areas having high potential to be zones of high deer damage severity because more than one measure was "severe" over time. Additional areas in Seneca and Erie Counties reported severe damage in 1982 but not in the earlier studies. These areas may now be severity zones due to the

effect of increasing deer populations. Several areas in Niagara and Cayuga Counties reported consistently low deer damage over time. All of the data for each town used to determine deer damage zones can be found in Appendix A.

In the mid-Hudson region, two areas of "severe" deer damage were identified (Figure 2). One area, spanning Columbia and Dutchess Counties, had both a high percent of farmers with damage and a high mean dollars of damage for those farmers with damage. The other area, in central Orange County, has towns with either high percent of farmers with damage or high mean dollars of damage but not both, making this area more difficult to define.

For fruit and grape growers in Central and Western New York, numerous small areas of "severe" damage were identified and several large areas of low damage (Figure 3). Two of the larger areas of "severe" damage were in western Chautauqua County and northern Wayne County. The major areas of low damage spanned Wyoming and Erie Counties and Madison, Onondaga, and Cayuga Counties.

In the mid-Hudson Valley there were two areas of "severe" damage where a high percentage of farmers had high dollar amounts of damage (Figure 4). These areas are in Dutchess and Columbia Counties.

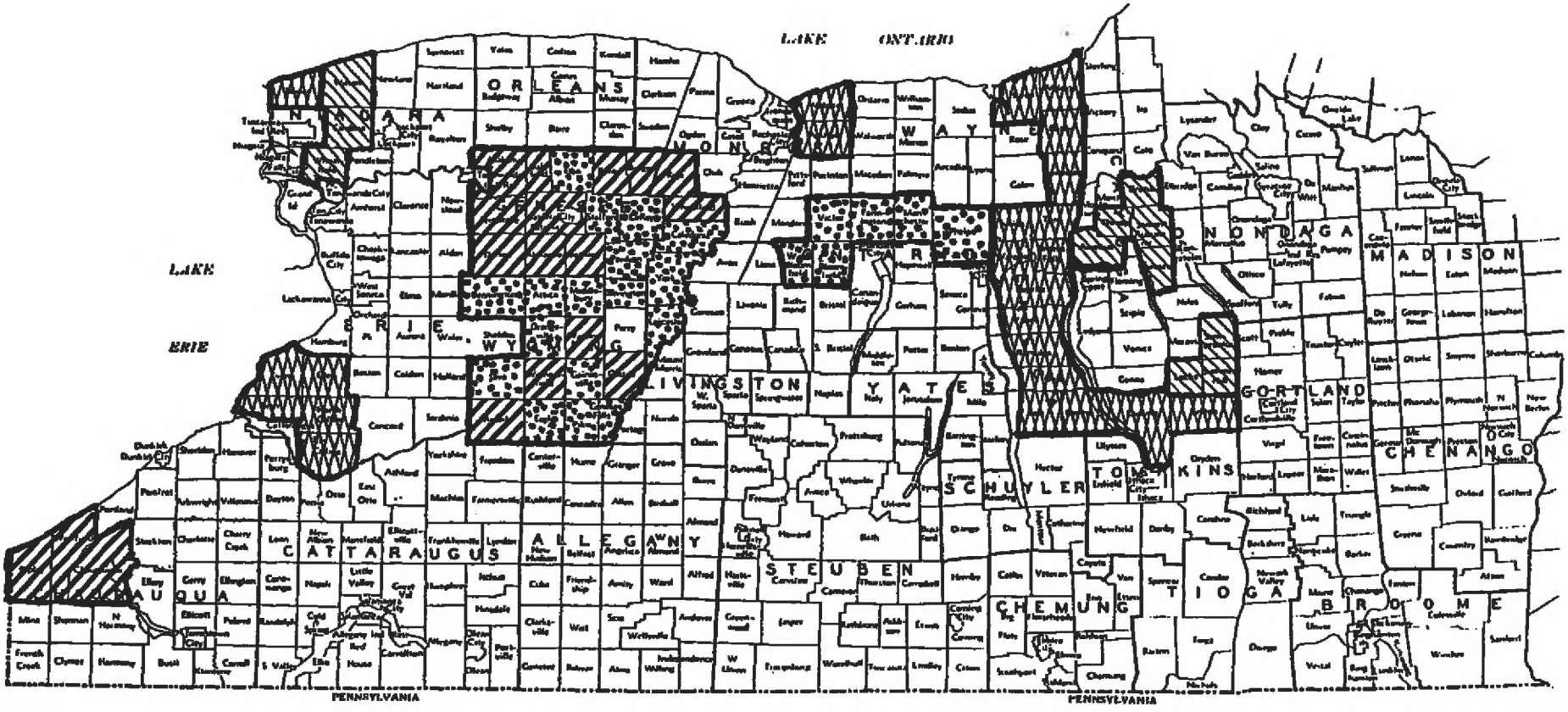

Figure 1. Deer Damage Severity Zones for Farmers Growing All Crops in Central and Western New York.

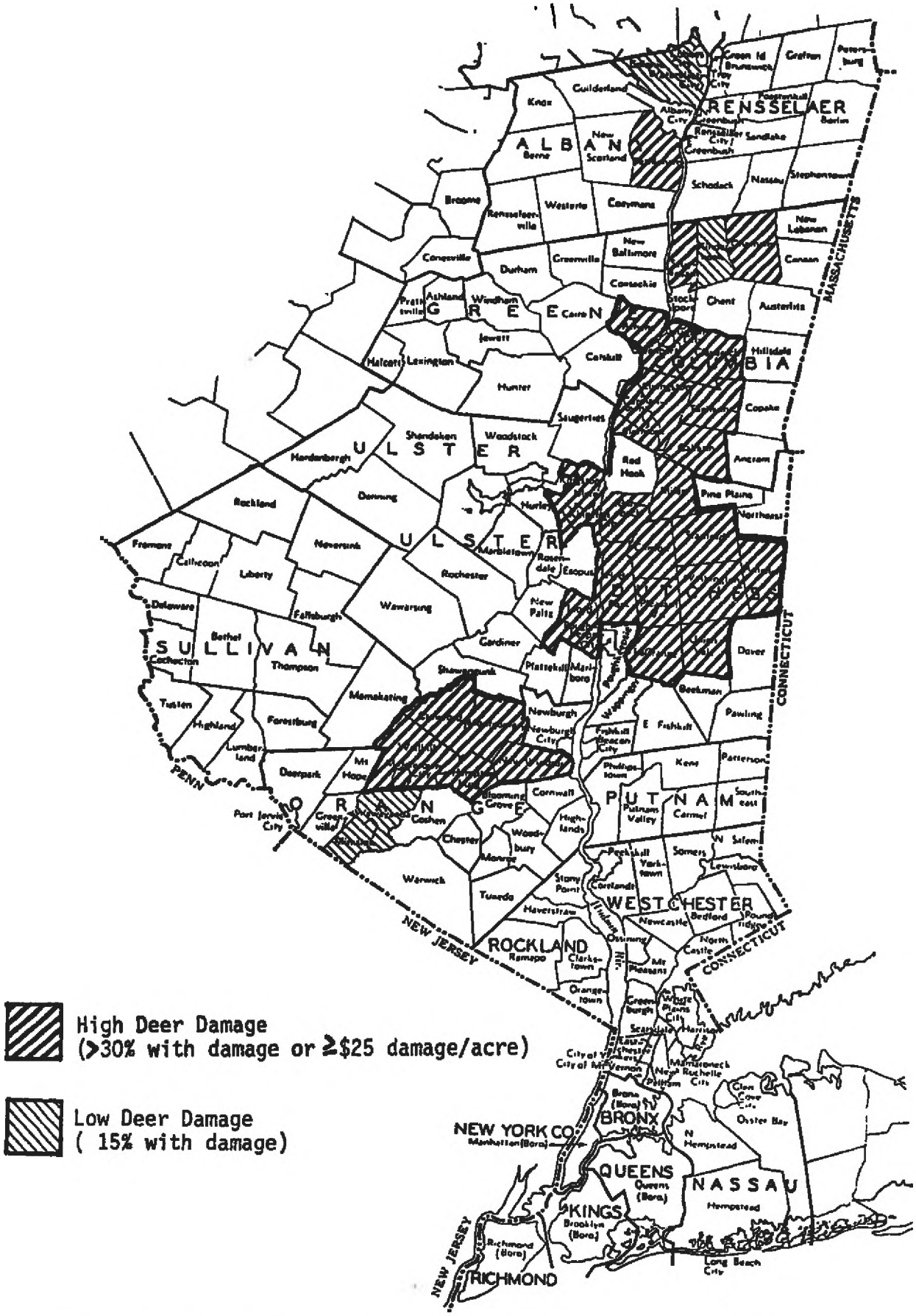

Figure 2. Deer Damage Severity Zones for Farmers Growing All Crops in the mid-Hudson Valley.

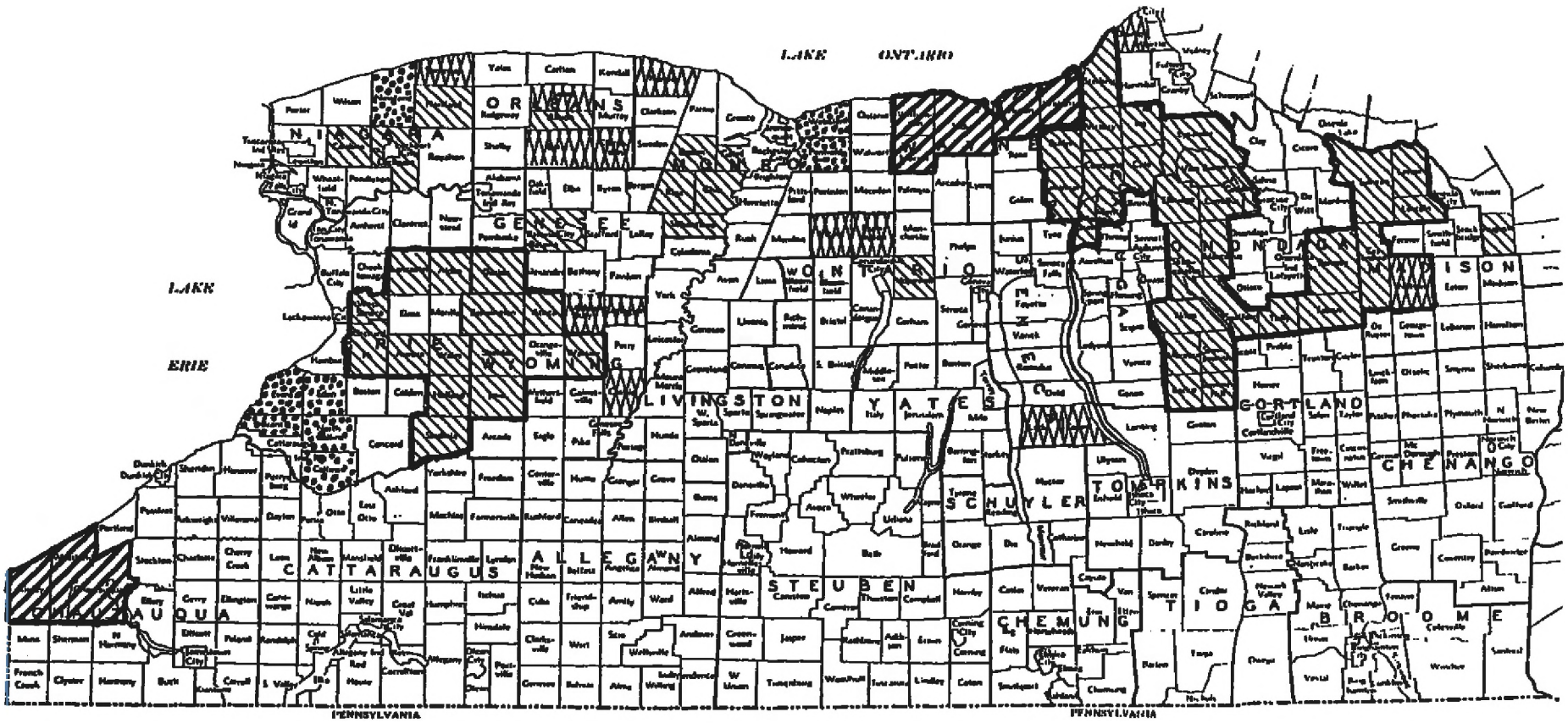

Figure 3. Deer Damage Severity Zones for Farmers Growing Fruit and Grapes in Central and Western New York.

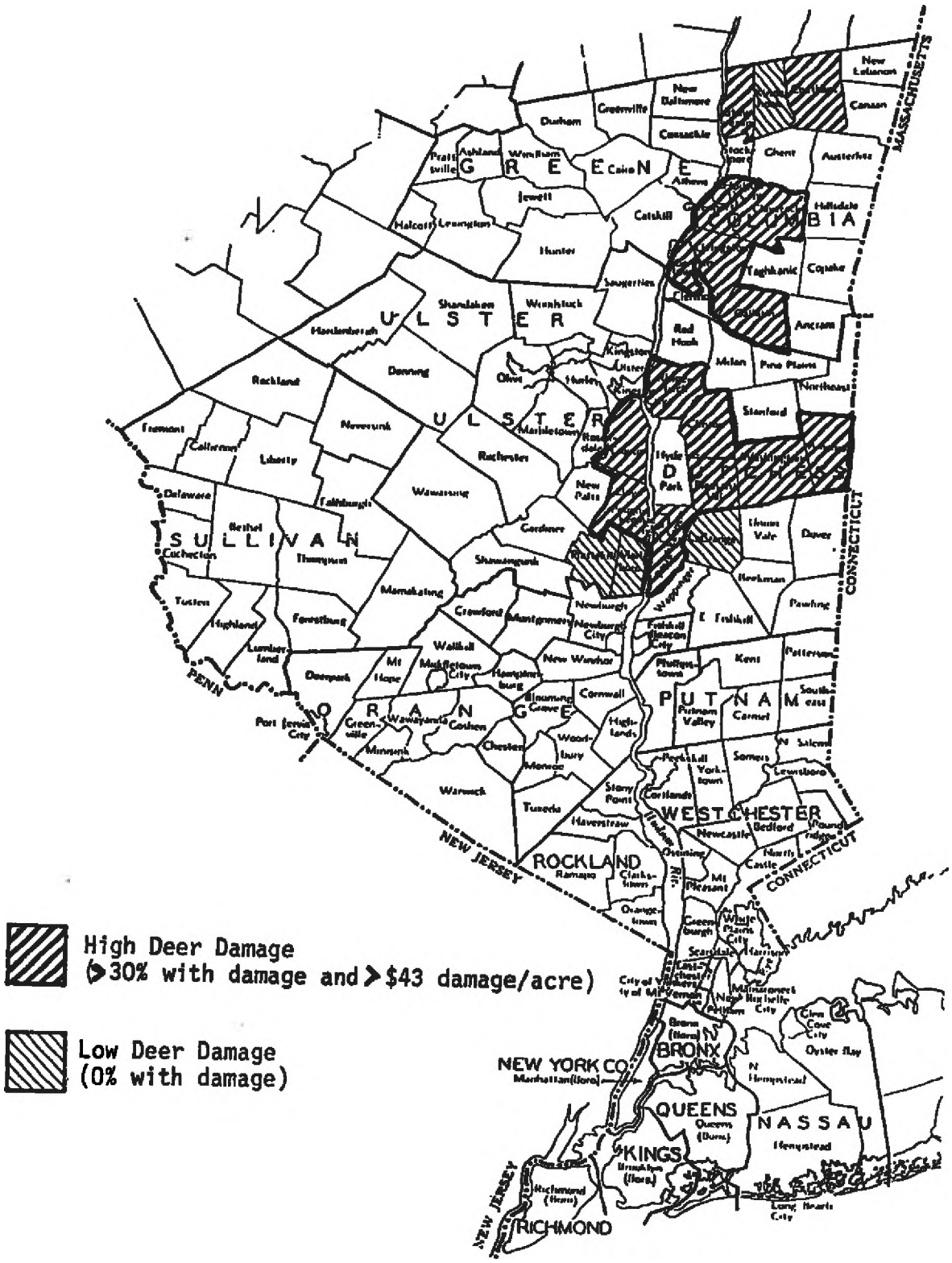

Figure 4. Deer Damage Severity Zones for Farmers Growing Fruit and Grapes in the mid-Hudson Valley.

SUMMARY

Areas of "severe" and "low" deer damage were identified for farmers growing all crops and those growing fruit and grapes. These areas were outlined using data from previous research of farmers' perceptions of deer damage. It is our hope that Bureau of Wildlife staff will use other data available to them to confirm our findings. From this work, zones will be identified for sample selection for the next phase of this job, which is to determine farmer preferences for mitigation measures.

APPENDIX A.

Table A-1. Percent of Farmers with Damage and Mean Dollars of Damage for Those with Damage by Township.

County / Town	Original Survey				Resurvey	
	All Crops		Fruit & Grapes		All Crops	Fruit & Grapes
	% with Damage	Mean $ Damage	% with Damage	Mean $ Damage	% with Damage	% with Damage
Orleans						
Albion	21.0	1.50	0.0		0.0	
Barre	23.4	2.60	33.3		0.0	
Kendall	22.1	2.60	27.3		12.5	
Murray	15.4	22.70	15.4		25.0	
Ridgeway	25.0	3.10	20.0		18.8	20.0
Shelby	23.4	1.00	9.1		0.0	
Carlton	21.1	1.20	23.1		11.1	
Gaines	24.6	5.90	34.6		0.0	
Claredon	25.0	1.30	30.8		16.7	
Yates					0.0	
Chautauqua						
Dunkirk-Pomfret	17.9	3.50	15.3			
Chautauqua	36.9	20.10	50.0			
Hanover	22.7	2.30	10.5			
Portland	15.5	7.60	5.0			
Arkwright-Villenova	19.0	9.90	16.7			
Ellery-Stockton	25.9	5.80	25.0			
Sheridan	16.7	6.40	17.0			
Westfield	22.2	17.30	20.0		30.2	26.9
Ripley					30.7	27.5
Erie						
Boston-Hamburg-Colden	19.3	8.80	5.6		8.7	
Alden-Lancaster	21.9	4.10	0.0		18.8	
Newstead	24.6	0.90	8.3		11.8	
Holland-Sardinia	21.0	5.00	0.0		25.0	
Eden	23.1	1.60	15.4		25.9	37.5
Clarence-Amherst-Grand Island	17.9	1.80	6.3		13.3	
Aurora-Wales	25.0	3.50	0.0		29.4	
Brant-Evans	15.9	2.10	13.7		25.9	37.5
Elma-Marilla	24.6	1.10				
Orchard Park-West Seneca	16.9	2.40	0.0			
Concord					29.4	
Collins-North Collins					33.3	33.3

Table A-1. Percent of Farmers with Damage and Mean Dollars of Damage for Those with Damage by Township. (continued)

County / Town	Original Survey				Resurvey	
	All Crops		Fruit & Grapes		All Crops	Fruit & Grapes
	% with Damage	Mean $ Damage	% with Damage	Mean $ Damage	% with Damage	% with Damage
Niagara						
Cambria	10.9	0.40	0.0		6.7	0.0
Lewiston	21.9	1.60	17.1		30.8	25.0
Lockport	11.7	1.30	0.0		30.8	
Hartland	15.0	2.90	0.0		0.0	
Porter	5.2		7.7		54.5	
Royalton	15.9	0.70	20.0		8.3	
Somerset	28.8	0.70	35.3		33.3	
Wheatfield	13.6	1.10	16.7		11.1	
Wilson	10.6	1.40	10.0		8.0	22.2
Newfane					20.8	50.0
Wayne						
Arcadia	20.3	1.70			10.7	
Savannah-Butler	20.0	0.80	0.0		29.6	
Galen	21.9	1.80	15.4			
Huron-Wolcott	22.6	2.90	24.1		41.7	50.0
Lyons	22.5	2.60	11.1			
Macedon	26.2	1.20	12.5		28.6	
Marion	16.7	2.40	5.6		11.1	40.0
Ontario	15.0	3.10	15.4		21.4	25.0
Palmyra	28.2	1.30			14.3	
Rose	20.6	0.90	16.7		10.1	
Sodus	30.9	2.90	41.5		32.1	38.9
Walworth	29.3	2.10	0.0		25.0	
Williamson	35.0	0.90	38.9		33.3	40.0
Monroe						
Brighton-Henrietta-Rush	32.3	1.20	20.0		28.6	
Chili-Gates-Ogden	29.7	1.20	0.0		35.7	
Clarkson-Sweden	20.0	1.40	27.3		16.7	
Greece-Parma	25.4	3.90	28.6		20.0	
Hamlin	19.6	0.60	33.3		0.0	
Mendon-Perinton-Pittford	20.2	1.90	12.5		27.2	
Irondiquoit-Penfield	33.3	3.10	19.0		64.3	33.3
Riga-Wheatland	34.8	1.90	0.0		36.5	

Table A-1. Percent of Farmers with Damage and Mean Dollars of Damage for Those with Damage by Township. (continued)

County / Town	Original Survey				Resurvey	
	All Crops		Fruit & Grapes		All Crops	Fruit & Grapes
	% with Damage	Mean $ Damage	% with Damage	Mean $ Damage	% with Damage	% with Damage
Cayuga						
Aurelius-Throop	13.2	3.70			13.0	
Brutus-Owasco-Sennet	8.0	1.50	11.1		0.0	
Cato-Ira	8.7	2.10	0.0		16.7	
Conquest-Mentz-Montezuma	9.5	2.20	0.0			
Fleming-Springport	12.0	2.80	14.3		16.7	
Genoa-Venice	20.7	1.90			27.3	
Ledyard-Scipio	24.4	3.20	27.3		19.0	
Locke-Sempronius-Summer Hill	13.5	3.70	0.0		10.0	
Moravia-Niles	9.6	1.30	0.0		33.3	
Sterling-Victory	7.6	12.10	0.0			
Herkimer						
Winfield	15.0	5.70				
Madison						
Cazenovia	20.8	3.40	0.0			
Eaton	23.4	16.60	16.7			
Fenner	12.1	32.10			28.6	
Lenox-Sullivan	9.4	1.50	0.0		20.0	0.0
Lincoln	11.4	2.30	0.0		36.4	
Madison	18.8	3.70				
Nelson	22.6	25.20	33.3			
Smithfield	14.0	3.10			21.4	
Stockbridge	11.1	0.90				
Oneida						
Augusta	18.9	1.50	0.0			
Bridgewater-Paris	15.4	2.70				
Kirkland	10.3		16.7			
Marshall-Sangerfield	15.4	3.70	10.0			

Table A-1. Percent of Farmers with Damage and Mean Dollars of Damage for Those with Damage by Township. (continued)

County Town	Original Survey				Resurvey	
	All Crops		Fruit & Grapes		All Crops	Fruit & Grapes
	% with Damage	Mean $ Damage	% with Damage	Mean $ Damage	% with Damage	% with Damage
Onondaga						
Elbridge-Camillus-Geddes	13.6	2.80	0.0		23.8	
Circero-Clay-DeWitt-Manlius	27.2	5.60			16.7	
Fabius-Tully	20.9	2.80	0.0			
Lafayette-Otisco	15.8	12.30	17.6		25.0	
Lysander-VanBuren	4.2	1.10	0.0		16.7	
Marcellus-Spafford	14.3	1.10	0.0		22.2	
Pompey	25.0	2.70	0.0			
Skaneateles	6.3	0.70	0.0			
Onondaga					15.8	20.0
Oswego						
Hannibal	7.7	1.30	10.0			
Oswego	16.7	4.20	33.3			
Seneca						
Covert-Lodi	34.0	7.30	37.0			
Fayette-Junius-Seneca Falls	25.5	3.30	10.0		36.6	20.0
Ovid-Romulus-Varick	31.0	3.00	25.0		80.0	
Tyre					46.7	
Waterloo					44.4	
Tompkins						
Lansing	33.9	9.70			32.4	
Groton					21.2	
Dryden					25.0	
Genesee						
Alabama-Oakfield	42.6	41.00			29.4	
Alexander-Bethany	32.8	25.00				
Batavia	30.2	95.90	0.0		11.1	
Bergen-Byron	43.8	7.00			29.4	
Darien	32.8	6.20	0.0			
Elba-Stafford	21.5	25.00			5.9	
Leroy-Pavillion	23.1	18.10				
Pembroke	27.7	7.90	20.0		44.4	

Table A-1. Percent of Farmers with Damage and Mean Dollars of Damage for Those with Damage by Township. (continued)

County / Town	Original Survey				Resurvey	
	All Crops		Fruit & Grapes		All Crops	Fruit & Grapes
	% with Damage	Mean $ Damage	% with Damage	Mean $ Damage	% with Damage	% with Damage
Livingston						
Avon	28.1	5.50			26.5	
Caledonia	33.3	11.90	50.0		28.6	
Geneseo	32.7	6.40				
Leicester	41.7	2.50				
Lima	15.5	71.10			20.4	
York	34.4	22.60			7.1	
Ontario						
Phelps	34.3	85.90	28.6		22.5	33.3
Canandaigua	30.6	20.30	25.0			
East-West Bloomfield	27.4	12.60			22.0	
Farmington-Victor	35.6	4.70	44.4			
Hopewell	25.4	1.40	0.0		18.2	
Manchester	27.4	52.50			28.6	
Geneva-Seneca					28.1	
Wyoming						
Arcade	33.3	7.20			33.3	
Attica	25.0	27.80	0.0		28.6	
Bennington	28.8	10.80	0.0		23.5	
Castile	52.0	23.00	66.7			
Covington	31.8	1.30	40.0			
Eagle	31.7	4.70				
Gainesville	24.1	2.80			12.5	
Java	39.7	14.90	0.0		8.3	
Orangeville	32.7	7.10	20.0		12.5	
Middlebury	44.7	8.70	55.6		12.5	
Pike-Genesee Falls	34.9	4.40				
Perry	19.0	0.50				
Sheldon	25.0	1.00	0.0		27.3	
Warsaw	31.6	24.70	0.0		25.0	
Wethersfield	45.5	26.70			60.0	
Albany						
Bethlehem	27.9	10.30				
Colonie	0.0					

Table A-1. Percent of Farmers with Damage and Mean Dollars of Damage for Those with Damage by Township. (continued)

County / Town	Original Survey				Resurvey	
	All Crops		Fruit & Grapes		All Crops	Fruit & Grapes
	% with Damage	Mean $ Damage	% with Damage	Mean $ Damage	% with Damage	% with Damage
Columbia						
Chatham	29.3	27.60	57.1	66.90		
Claverack	38.5	10.20	41.7	73.40		
Clermont	35.3	14.70	27.3	40.50		
Gallatin	50.0	10.40		54.80		
Germantown	40.0	11.70	50.0	24.30		
Ghent	16.7	3.30	0.0			
Greenport	60.0			44.90		
Kinderhook	12.5		0.0			
Livingston	51.9	11.90	30.8	35.90		
Stockport	25.0			1.20		
Stuyvesant	24.1	14.00		83.30		
Taghkanic	56.3	9.10		1.30		
Dutchess						
Amenia	43.5	54.30		428.60		
Clinton	64.3	81.90		600.00		
Dover	21.7	5.10		25.00		
Hyde Park	33.3	3.80		17.80		
LaGrange	29.2	18.70	0.0			
Milan	40.0					
Pine Plains	21.4	3.60				
Pleasant Valley	23.1	15.80	42.9	77.40		
Poughkeepsie	20.0			58.30		
Red Hook	26.4	9.40	26.7	25.70		
Rhinebeck	25.0	19.40		52.60		
Stanford	30.6	10.80				
Union Vale	44.8	28.00				
Wappinger				1.60		
Washington	35.7	28.80	22.2	120.80		
Greene						
Athens	40.0			7.60		

Table A-1. Percent of Farmers with Damage and Mean Dollars of Damage for Those with Damage by Township. (continued)

County / Town	Original Survey				Resurvey	
	All Crops		Fruit & Grapes		All Crops	Fruit & Grapes
	% with Damage	Mean $ Damage	% with Damage	Mean $ Damage	% with Damage	% with Damage
Orange						
Blooming Grove	16.7					
Chester	15.4					
Crawford	22.2	6.90		20.0		
Goshen	18.2	13.20		173.9		
Hamptonburgh	35.7	4.10				
Minisink	10.5					
Montgomery	20.9	24.50		50.0		
Newburgh						
New Windsor	60.0			8.3		
Wallkill	23.8	31.90		246.9		
Wawayanda	13.0					
Ulster						
Esopus	22.2		27.3	219.4		
Lloyd	25.0	29.90	30.0	29.9		
Marlborough	12.8	19.30	13.0	19.3		
Plattekill	25.0		9.1	3.4		
Rosendale						
Ulster	37.5					